

Discovering Advanced high potential Materials for high Energy density Li ion batteries

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Due to their low weight and high energy densities and long cycle life, the development of rechargeable Li-ions batteries is a major scientific challenge. For many applications requiring energy storage, the need to increase the energy density of storage devices is of first importance, e.g. in computers, cell phones, electric vehicles, aeronautics, space, etc. This is the reason why the battery scientific community is studying intensively and worldwide new high capacity cathodes materials. A new composition mainly based on manganese and lithium offers promising results: it has been demonstrated in recent years that Li-rich Mn-based materials are excellent substitutes for the conventional LiCoO₂ cathode [1-4]. After a composition screening, a new material family has been discovered: the Li-Mn-O system has been investigated as potential new material for Li-ion batteries.

In this presentation, the first results will be presented in terms of cycling performances but also the chemical characterizations (X-ray diffraction, microscopy, thermogravimetric analysis, redox titration) performed in the laboratory to better understand and improve the performances of this new cathode material will be detailed.

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